UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/818,653	03/28/2001	Kazushi Mori	010424	2491

23850 7590 11/13/2003

ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP
1725 K STREET, NW
SUITE 1000
WASHINGTON, DC 20006

EXAMINER	
PATEL, GAUTAM	
ART UNIT	**PAPER NUMBER**
2655	

DATE MAILED: 11/13/2003

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/818,653	MORI ET AL.	
	Examiner	Art Unit	
	Gautam R. Patel	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *4,6,8,10,12 and 14-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,7,11,13,19 and 20* is/are rejected.

7)☒ Claim(s) *9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2, 4* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

#7

DETAILED ACTION

1. Claims 1-20 are pending for the examination..

Election/Restriction

2. Claims 4, 6, 8, 10, 12 and 14-18 are withdrawn from further consideration by the examiner pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species [spies other than fig. 1-5], there being no allowable generic or linking claim. It is assumed that election was made without traverse in Paper No. 6, since

Applicants are reminded that **upon the cancellation of claims to a non-elected invention, the inventorship must be amended** in compliance with 37 C.F.R. § 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a diligently-filed petition under 37 C.F.R. § 1.48(b) and by the fee required under 37 C.F.R. § 1.17(h). Applicants are urged to cancel the non-elected claims.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. § 119(a)-(d), which papers have been placed of record in the file.

NOTES & REMARKS

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. For example page 12 line 17, reads "the optical pickup apparatus in Fig. 24". Since fig. 24 does not show any optical pickup at all, it is assumed that a typographical error was made and

the Applicants are referring to fig. 23. Applicant's cooperation is requested in correcting any errors of which Applicant may become aware in the specification.

Specification

3. The disclosure is objected for following reasons.

The title of the invention is neither precise nor descriptive. A new title is required which should include, using twenty words or fewer, claimed features that differentiate the invention from the Prior Art. It is recommended that the title should reflect the gist of or the improvement of the present invention.

Correction is required.

Corrections are required.

Claim Rejections - 35 U.S.C. § 103

4. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-3, 5, 7, 11, 13 and 19-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over "Applicants Admitted Prior Art" [AAPA], (hereafter AAPA) in view of Nagahama et al., US. patent Re. 35,332 (hereafter Nagahama).

As to claim 1, AAPA discloses the invention as claimed [see Figs. 20-25], including a light source, a first diffraction element, and a first photodetector comprising:

a light source [fig. 23, unit 506] emitting a light beam [pg. 11, lines 9-19];

a first diffraction element [fig. 20, unit 508] diffracting a returned light beam based on the light beam emitted from said light source [pg. 11, line 14 to pg. 12, line 3]; and

a first photodetector [fig. 23, unit 507] detecting the returned light beam diffracted by said first diffraction element [pg. 11, lines 9-19],

said first photodetector having four photodetection parts sectioned by a first section line substantially parallel to the direction in which a condensed spot of the returned light beam diffracted by said first diffraction element is moved by a variation in the wavelength of said light source and a second section line orthogonal to said first section line [pg. 12, line 17 to page 13, line 8],

the returned light beam diffracted in said first and second regions of said first diffraction element forming condensed spots at positions apart from each other on opposite sides on said first section line with respect to the intersection of said first and second section lines of said photodetector [pg. 12, line 17 to page 13, line 8 and pg. 3, line 6 to pg. 4, line 22],

the returned light beam diffracted in said third, fourth, fifth and sixth regions of said first diffraction element forming condensed spots on the four photodetection parts of said first photodetector or on said first section line [pg. 12, line 17 to page 13, line 8 and pg. 3, line 6 to pg. 4, line 22].

AAPA discloses all of the above elements, including a first diffraction element. AAPA does not specifically discloses well known details of different regions that a diffraction element could have as different sections or how they are arranged.

However, it is well known in the art that most diffraction elements have sections or regions on them according to desired light control mechanism. Also Nagahama clearly discloses that it well known in the art to divide diffraction element into two regions [fig. 10A unit 23]. Also Nagahama also clearly discloses that gratings can be

divided into six areas [see fig. 3, fig. 4, fig. 6 etc.], [as claimed by the applicants]. Nagahama does not specifically disclose that first and second dividing lines intersecting each other as first and second regions, and third, fourth, fifth and sixth regions obtained by equally dividing the remaining two regions in second diagonal positions by a third dividing line. In other words Nagahama does not discloses details of divisions exactly as claimed. Both AAPA and Nagahama are interested in improving the diffraction elements which controls the light beams.

One of ordinary skill in the art at the time of invention would have realized that different designs require different types of diffraction devices and gratings can be formed in different shapes and sizes. Therefore, it would have been obvious to have used a diffraction element with six divisions as arranged as an diffraction element having two regions in first diagonal positions in the system of AAPA as taught by Nagahama because one would be motivated to arrange the gratings according to system requirement in the system of AAPA and provide better diffraction quality with single device, thus reducing number of parts in a system and saving money. As to exactly divide the regions, Nagahama clearly teaches that structure of the diffraction device is not restricted to above example [device 13], but it can be adequately formed in another manner [col. 8, lines 38-45]. In other words one of ordinary skill in the art would have been able to arrange the diffraction device of Nagahama which as six divisions in a two regions in first diagonal position among four regions divided by first and second dividing lines intersecting each other as first and second regions, and third, fourth, fifth and sixth regions obtained by equally dividing the remaining two regions in second diagonal positions by a third dividing line, in absence of criticality, as taught by Nagahama.

6. As to claim 2, Nagahama discloses:

the first, second, third, fourth, fifth and sixth regions of said first diffraction element provide each light beam with a spatial variation corresponding to a focus state on an optical recording medium [col. 8, lines 23-57]. As to rest of the claim, AAPA discloses so that the focus state can be detected by operating the outputs of the four

photodetection parts in said first photodetector [fig. 21 and; pg. 12, line 17 to page 13, line 8 and pg. 3, line 6 to pg. 4, line 22].

7. As to claim 3, Nagahama discloses:

the returned light beam diffracted in the third, fourth, fifth and sixth regions of said first diffraction element forms condensed spots [col. 8, lines 23-57]. As to rest of the claim, AAPA discloses substantially in the center of the four photodetection parts in said first photodetector [fig. 21 and; pg. 12, line 17 to page 13, line 8 and pg. 3, line 6 to pg. 4, line 22].

8. As to claim 5, AAPA discloses:

the spatial variation corresponding to said focus state is astigmatism [fig. 21 and; pg. 12, line 17 to page 13, line 8 and pg. 3, line 6 to pg. 4, line 22].

9. As to claim 7, AAPA discloses:

said astigmatism is provided in a direction substantially at 45 degree with respect to said first and second section lines of said first photodetector [fig. 21 and; pg. 12, line 17 to page 13, line 8 and pg. 3, line 6 to pg. 4, line 22]..

10. As to claim 11, AAPA discloses:

a second diffraction element [fig. 23, unit 509] provided in an optical path between said light source and said first diffraction element, and splitting a light beam emitted from said light source into a main light beam and first and second sub light beams [page 11, line 9 -19];

a second photodetector [fig. 25, unit 160 to 162] having two photodetection parts divided into two by a section line substantially parallel to said first section line of said first photodetector [page 3, line 6 to page 5, line 22]; and

a third photodetector [fig. 21 & 25, unit 160 to 162] having two photodetection parts divided into two by a section line substantially parallel to said first section line of said first photodetector [page 3, line 6 to page 5, line 22],

said first diffraction element diffracting a first returned light beam from said optical recording medium based on said main light beam and guiding said diffracted light beam into said first photodetector, while diffracting second and third returned light beams from said optical recording medium based on said first and second sub light beams and guiding said diffracted light beams into said second and third photodetectors [pg. 12, line 17 to page 13, line 8 and pg. 3, line 6 to pg. 4, line 22].,

said first returned light beam diffracted in said first and second regions of said first diffraction element forming condensed spots at positions apart from each other on opposite sides on said first section line with respect to the intersection of the first and second section lines of said first photodetector, said first returned light beam diffracted in said third, fourth, fifth and sixth regions of said first diffraction element forming condensed spots substantially in the center of the four photodetection parts in said first photodetector [pg. 12, line 17 to page 13, line 8 and pg. 3, line 6 to pg. 4, line 22].,

said second returned light beam diffracted in said first and second regions of said first diffraction element forming condensed spots on the section line of said second photodetector, said second returned light beam diffracted in said third, fourth, fifth and sixth regions of said first diffraction element forming condensed spots in two photodetection parts in said second photodetector [pg. 12, line 17 to page 13, line 8 and pg. 3, line 6 to pg. 4, line 22].,

said third returned light beam diffracted in said first and second regions of said first diffraction element forming condensed spots on the section line of said third photodetector, said third, fourth, fifth and sixth regions of said first diffraction element forming condensed spots in the two photodetection parts in said third photodetector [pg. 3, line 6 to pg. 4, line 22 and pg. 12, line 17 to page 13, line 8].

11. As to claim 13, it is rejected for the similar reasons set forth in the rejection of claims 1 and 7, supra.

12. As to claims 19-20, they are claims corresponding to claims 1-2 respectively and they are therefore rejected for the similar reasons set forth in the rejection of

claims 1-2 respectively, supra. As to the added limitation of 45 degree [see fig. 21(a) and 21(c).

Allowable Subject Matter

13. Claim 9 is objected as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

NOTE: Claim 9 is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose an optical pickup apparatus which includes a diffraction element which has six regions which are arranged such that "said first, second, third, fourth, fifth and sixth regions of said first diffraction element are formed to share the intersection of said first, second, and third dividing lines of said first diffraction element as a common origin, said first and second regions of said first diffraction element have grating patterns set with reference to two points on said first section line apart from each other from the intersection of said first and second section lines of said first photodetector, and said third, fourth, fifth and sixth regions of said first diffraction element have grating patterns set with respect to substantial centers of the four photodetection parts in said first photodetector". It is noted that the closest prior art, AAPA and Nagahama shows a similar apparatus which reads and writes with three beam method and discloses a diffraction element and Nagahama discloses various kind of six possible divisions of the diffraction elements. However AAPA and Nagahama fails to disclose details of all six regions AND details of photodetecting elements corresponding to these six regions as disclosed and claimed.

Other prior art cited

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. Arai et al. (US. patent 6,185,167) Optical head and information recording

..

2. Tsuji et al. (US. patent 4,983,017) Optical head device ...

3. Ophey (US. patent 6,407,973) Device for scanning ...

4. Ohmishi et al. (US. patent 6,125,087) Optical pickup ..

5. Alon et al. (US. patent 6,314,071) Method and apparatus for reading multiple tracks ...

Contact information

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gautam R. Patel whose telephone number is (703) 308-7940. The examiner can normally be reached on Monday through Thursday from 7:30 to 6.

The appropriate fax number for the organization (Group 2650) where this application or proceeding is assigned is (703) 872-9314.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Doris To can be reached on (703) 305-4827.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 305-4700 or the group Customer Service section whose telephone number is (703) 306-0377.

Gautam R. Patel
Patent Examiner
Group Art Unit 2655

November 10, 2003